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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,492	10/28/2003	Samantha S.H. Tan	59081-8010.US01	5759
22918	7590	04/22/2005	EXAMINER	
PERKINS COIE LLP P.O. BOX 2168 MENLO PARK, CA 94026			KORNAKOV, MICHAEL	
			ART UNIT	PAPER NUMBER
			1746	
DATE MAILED: 04/22/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/696,492

Applicant(s)

TAN ET AL.

Examiner

Michael Kornakov

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-81 and 93-115 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-81 and 93-115 is/are rejected.
- 7) ☒ Claim(s) 50 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/24/04, 10/28/03
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-81, 93-115 and cancellation of claims 82-92 in the reply filed on 02/03/2005 is acknowledged. Claims 1-81 and 93-115 are examined on the merits.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1,2,32,37-39,73,78,81,93,94,98-100,105,106,109 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 28,40 of copending Application No. 10/627,416.

Although the conflicting claims are not identical, they are not patentably distinct from each other, because both groups of claims recite treating a workpiece with acidic solution, including HCl, while agitating the cleaning solution, utilizing the frequencies in ultrasonic ranges, wherein treating includes placing a workpiece into the cleaning solution, which is placed into a first vessel (inner tank) and the first vessel is contained

Art Unit: 1746

within a second vessel (outer tank) and the second vessel contains an aqueous solution in which the first vessel is at least partially disposed, and the first vessel is covered with a lid. The Application 10/627,416 does not specifically indicate treating a molybdenum mask. However, because molybdenum mask represents a metal workpiece, which is conventionally treated with acid, as provided by U.S. 5,152,878 to Datta et al (col.2, lines 16-65; col.3, lines 21-57), one skilled in the art would have found obvious to utilize the processing steps, recited in 10/627,416 in order to treat the molybdenum mask with the reasonable expectation of success.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Drawings

4. The submission of informal drawings 1-8 is noticed. However, replacement formal drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to this Office action. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. Failure to timely submit replacement drawing sheets will result in ABANDONMENT of the application. The requirement for corrected drawings will not be held in abeyance.
5. The drawing, Fig. 5, is objected to as failing to comply with 37 CFR 1.84(p)(5) because it does not include the reference sign 110 mentioned in the description on

Art Unit: 1746

page 10, paragraph [0039] and the line B-B, mentioned in the description on page 10, paragraph [0041]. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The disclosure is objected to because of the following informalities: Page 10, paragraph [0041] indicates that the wafer holder 410 may be used as part of wafer boat 340 of **Figure 3**, for example. Apparently, Fig. 5 should be indicated. Appropriate clarification and/or correction is required.

Claim Objections

7. Claim 50 is objected to under 37 CFR 1.75(c), as being fully redundant to claim 47. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for processing conditions, with the value ranges presented in claims 10,12,15,16,25-28,43,45,48,49,56,60-63,69-72, does not reasonably provide enablement for the processing conditions with the value ranges, presented in claims 11,13,14,18-21,23,24, 29,42,44, 46,47,50-55,58,59,67,68. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with processing conditions within the ranges, presented in these claims.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1,30,31,93,98,103,104,105,109,114 are rejected under 35 U.S.C. 102(b) as being anticipated by Datta et al (U.S. 5,152,878).

Datta teaches conventional method of cleaning a molybdenum mask, having

deposits of Cr, Cu, Au, Pb/Sn thereon, comprising treating the mask with a cleaning solution including HCl. Datta also teaches, that after cleaning the mask can be reused, therefore the step of removing the mask from the cleaning solution after a predetermined period of time is inherent in the teaching of Datta. Regarding the instant claim 30, Datta teaches that the mask is used for the deposition of metals on substrate, wherein the evaporized metal particles strike the substrate **through** the mask, therefore the mask, described by Datta inherently possesses a set of through holes (col.1, lines 30-38; col.2, lines 17-57; col.3, lines 22-56). Regarding the instant claims 103 and 114, see Table I of Datta.

Therefore, all the limitations of the instant claims are explicitly or inherently met by Datta.

11. Claims 32 is rejected under 35 U.S.C. 102(b) as being anticipated by JP11-290805.

JP'805 teaches a method of cleaning a metal mask, which includes placing the mask in a cleaning solution and ultrasonically agitating the cleaning solution for a predetermined time [0007], [0008]. Therefore, all the limitations of the instant claim are explicitly met by JP'805.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1746

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Datta et al (U.S. 5,152,878).

Datta does not specifically indicate the period of time for cleaning. However, Datta teaches that removing metal residues on the mask by typical chemical cleaning may attack the molybdenum base of the mask and the extent of attack is a strong function of cleaning time (col.3, lines 55-56), thus indicating that cleaning time is a result effective

Art Unit: 1746

parameter and motivating the skilled artisan to optimize the cleaning time. However, discovery of optimum value of result effective variable in known process is ordinarily within the skill in the art and would have been obvious, consult *In re* Boesch and Slaney 205 USPQ 215 (CCPA 1980).

16. Claims 2, 32,36,37, 40,41,42,43,44,45,46-50, 67-72, 94,106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Datta et al (U.S. 5,152,878) in view of JP11-290805.

While teaching placing a molybdenum mask in a hydrochloric acid cleaning solution, Datta remains silent about agitating the cleaning solution. However, the agitating of solution during the metal mask cleaning is known in the art. Thus, JP'805 teaches ultrasonic agitating during the cleaning of metal mask. Therefore, one skilled in the art motivated by JP'805 would have found obvious to utilize ultrasonic agitation of cleaning solution in order to enhance molybdenum mask cleaning in the teaching of Datta with the reasonable expectation of success. With regard to claim 40, while teaching oven drying of mask, Datta remains silent about the use of nitrogen. However, one skilled in the art would have found obvious to utilize nitrogen in order to prevent excessive oxidation of molybdenum mask during drying in the method of Datta/JP'805.

Regarding claims 46-50, the combined teaching of Datta/JP'805 does not specifically indicate the period of time for cleaning. However, Datta teaches that removing metal residues on the mask by typical chemical cleaning may attack the molybdenum base of the mask and the extent of attack is a strong function of cleaning time (col.3, lines 55-56

Art Unit: 1746

of Datta), thus indicating that cleaning time is a result effective parameter and motivating the skilled artisan to optimize the cleaning time. However, discovery of optimum value of result effective variable in known process is ordinarily within the skill in the art and would have been obvious, consult *In re* Boesch and Slaney 205 USPQ 215 (CCPA 1980).

Regarding claims 67-72, the combined teaching of Datta/JP'805 does not specifically indicate the temperature of the cleaning environment. However, the temperature of the wet chemical cleaning is result effective parameter, because it affects the rate of the reaction and time required for chemical processing. However, discovery of optimum value of result effective variable in known process is ordinarily within the skill in the art and would have been obvious, consult *In re* Boesch and Slaney 205 USPQ 215 (CCPA 1980).

17. Claims 3-28, 33-35, 38-39, 51-66, 73-81, 95-97,99-102,107,108, 110-113,115 are rejected under 35 U.S.C. 103(a) as being unpatentable over Datta et al (U.S. 5,152,878) in view of JP11-290805 and in further view of Spring (Metal Cleaning, Reinhold Publishing Corporation, 1963. pages 83-89).

While utilizing the ultrasonic agitation, and providing for the cover of treatment tank, the combined teaching of Datta/JP'805 does not specifically indicate the particularities of processing equipment and the steps of handling the mask during the cleaning. It is noted here that the mask of Datta/JP'805 is made of metal. Spring teaches conventional approach to handling metal parts during their cleaning, wherein metal parts are placed into a container and the container is placed into the processing

Art Unit: 1746

solution, which is contained into the vessel, surrounded by liquid and placed into another vessel, having transducers placed along its outside surfaces (Spring, pages 88-89).

Because both Datta/JP'805 and Spring are concerned with ultrasonic cleaning of metal parts in aggressive solutions and Spring teaches the conventional approach to such cleaning, one skilled in the art motivated by teaching of Spring would have found obvious to put molybdenum mask in a container and place the container into a cleaning solution, which is contained into a first vessel and provide a second vessel with aqueous solution surrounding the first vessel, as per teaching of Spring in order to create the optimum environment for propagating the ultrasonic waves into the cleaning solution and contacting the ultrasonically activated cleaning solution with molybdenum mask in the teaching of Datta/JP'805.

Regarding claims 4, 6 and the other claims reciting covering the respective containers, one skilled in the art would have found obvious to cover the container with the mask in order to fix the mask inside the container and provide safe handling of the container with the mask, and to cover the vessel with cleaning solution in order to prevent spreading the hazardous solution into the surrounding areas.

Regarding claim 7, one skilled in the art would have found obvious to utilize nitrogen in order to prevent excessive oxidation of molybdenum mask during drying in the method of Datta/JP'805/Spring.

While utilizing the ultrasonic agitation, the combined teaching of

Art Unit: 1746

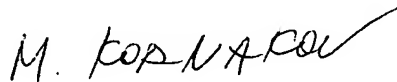
Datta/JP'805/Spring does not specifically indicate values of agitation frequency or agitation power, as per claims 17-28, 52-56 and claims 63. It is noticed here that these parameters are result effective, because they affect the agitation and the other physical conditions of cleaning liquid and therefore the effectiveness of cleaning. However, discovery of optimum values of result effective variables in known process is ordinarily within the skill in the art and would have been obvious, consult *In re* Boesch and Slaney 205 USPQ 215 (CCPA 1980).

Regarding claims 64-66, Spring teaches the use of containers, made of plastics and the other materials, resistive to corrosive environment of cleaning liquids. Therefore, one skilled in the art, motivated by Spring would have found obvious to utilize known acid corrosion resistive materials, such as Teflon or high density polyethylene for chemical containers, in the combined teaching of Datta/JP'805.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "M. Kornakov", with a long, sweeping horizontal stroke extending to the right.

Michael Kornakov
Primary Examiner
Art Unit 1746

04/15/2005